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STANDARD FORM 1449 (REV. 2/2012) Prescribed by GSA - FAR (48 CFR) 63.212

2										
19. ITEM NO.		20. SCHEDULE OF SUPPLIE	S/SERVICES			21. QUANTITY	22. UNIT	23. UNIT PF		24. AMOUNT
	(11 pages)	dated July 13, 20	16 in	the amount	of					
	\$176,419.1	_								
	This is a	Time-and-Materials	(T&M)	task orde	r					
	with a tota	al ceiling price o	f \$176	5,419.1, wh	ich					
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	Contractor	is not authorized	l to ex	ceed. The						
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	The total	obligated/funded a	ımount	for this o	rder					
	is \$50,000	. This order is he	ereby i	ncremental	ly					
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	Amounts and	d Ceilings. Attach	ment E	3 is hereby						
	incorporate	ed (1 page).								
	Contracting	g Officer's Repres	entati	ve (COR) f	or					
	this task			(001., 1	0.2					
	Melissa Pu	chalski								
	(202) 343-	9882								
	* **	melissa@epa.gov								
	Alternate	COP •								
	Ralph Baumo									
	(919) 541-									
	* **	r.ralph@epa.gov								
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CONTINUATION SHEET	EP-W-16-015/0010	3	22

NAME OF OFFEROR OR CONTRACTOR

ITEM NO. (A)	SUPPLIES/SERVICES (B)	QUANTITY (C)	UNIT (D)	UNIT PRICE (E)	AMOUNT (F)
	Delivery: 06/30/2016				
	Period of Performance: 07/09/2016 to 07/08/2021				
0001	CASTNET contract EPW16015 Task Order 10 NOx SOx				
	Special Studies				
	Melissa Puchalski				
	#EP-W-16-015; TO:#0010				
	Supplemental Monitoring Studies at CASTNET Sites				
	in Support of the NOx SOx Secondary Standard				
	Accounting Info:				
	16-17-C-58D5-102A45-2505-1658DC6128-001 BFY: 16				
	EFY: 17 Fund: C Budget Org: 58D5 Program (PRC):				
	102A45 Budget (BOC): 2505 DCN - Line ID:				
	1658DC6128-001				
	Funding Flag: Partial				
	Funded: \$50,000.00				

Title: Supplemental Monitoring Studies at CASTNET Sites in Support of

the NOx/SOx Secondary Standard

Contractor: Amec Foster Wheeler

Contract #: EP-W-16-015

Task Order #: 0010

Period of Performance: 7/9/2016 to 7/8/2017

EPA Key Personnel

Task Order Project Officer (TOPO)/Contract Level Project Officer (PO):

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Clean Air Markets Division (OAP/OAR/CAMD)

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email: Baumgardner.ralph@epa.gov

Contracting Officer (CO):

Rob Gray

Contracting Officer

Administrative Contract Service Center

1200 Pennsylvania Ave N.W.

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Washington DC 20460

phone: (202) 564-1698

email: gray.roberta@epa.gov

STATEMENT OF WORK

I. INTRODUCTION

The Clean Air Status and Trends Network (CASTNET) is a long-term environmental monitoring network that measures changes in ambient air quality and assesses atmospheric deposition over broad geographic regions of the U.S. (https://www.epa.gov/castnet). Operating since 1987, CASTNET has evolved into a robust regional monitoring program which currently consists of approximately 95 monitoring stations nationwide. The Environmental Protection Agency (EPA) coordinates the operation of the network in cooperation with numerous federal, tribal, state and local partners.

The primary monitoring objectives of CASTNET are to:

- Provide high quality data on atmospheric deposition, rural ground level ozone and other forms of atmospheric pollution;
- Support the primary and secondary ozone NAAQS and provide data on NAAQS compliance in rural
 areas;
- Monitor the status and trends in regional air quality and atmospheric deposition;
- Assess and report on geographic patterns and long-term, temporal trends in ambient air pollution and atmospheric deposition;
- Improve our understanding of PM and ozone formation;
- Validate and improve atmospheric models;
- Provide data for health-based research and epidemiology studies;
- Assess the effectiveness of EPA's emission reduction programs; and
- Support science and ecosystem studies.

CASTNET sites measure weekly average concentrations of sulfate (SO₄²⁻), nitrate (NO₃⁻), ammonium (NH₄⁺), sulfur dioxide (SO₂), nitric acid (HNO₃), chloride (Cl⁻) and the base cations (Na⁺, K⁺, Mg²⁺and Ca²⁺) using a 3-stage filter pack. In addition, each site may make ancillary measurements, including hourly ozone (O₃), hourly meteorology, ammonia (NH₃) gas using passive devices, and trace-level gases. Trace-level gas monitors include reactive oxidized nitrogen (NOy), nitric oxide (NO), sulfur dioxide (SO₂) and carbon monoxide (CO). CASTNET O₃, meteorological, and trace gas measurements follow the requirements in the Code of Federal Regulations (CFR) and EPA's Quality Assurance Handbook.

II. PURPOSE

The primary purpose of this task order is to improve the science and understanding of deposition process within the atmosphere. The EPA is currently evaluating the secondary National Ambient Air Quality Standard (NAAQS) for NOx and SOx. The work under this task will enhance the existing research currently available on direct deposition methods, atmospheric chemical processes that drive deposition parameters and estimates of sulfur and nitrogen loading to various landscapes. This research is a collaborative effort between EPA's Office of Air and Radiation (OAR), the Office of Research and Development (ORD), and other federal partners.

Under this task order the contractor will continue to operate the enhanced NOy analyzer at the Beltsville, MD CASTNET site. This includes modifying the existing setup to include a Na₂CO₃ coated denuder to measure nitric acid (HNO₃).

Also under this task order, the contactor will develop a site characterization dataset for 3 co-located CASTNET/AMoN sites. The dataset will contain information about the soil and vegetation characteristics

within 1km of each AMoN site. A bi-direction flux box model will be run using the site characterization information as input to calculate NH₃ fluxes at each site. The three sites where measurements shall be made are Bondville, IL (BVL130), Coweeta, NC (COW137) and Chiricahua National Monument, AZ (CHA467). Amec FW shall develop SOPs and a full study plan prior to beginning field and/or laboratory analysis.

III. CONTRACT LEVEL STATEMENT OF WORK REFERENCE

The tasks to be performed under this task order are consistent with the activities authorized in CLIN 22 of the contract's Statement of Work.

IV. TECHNICAL DIRECTION

1. Prepare a Technical Proposal & Cost Estimate

The Contractor shall prepare a Task Order Proposal in accordance with the terms and conditions of contract clauses B.2 entitled Fixed Rates for Services – Indefinite delivery/Indefinite quantity contract.

2. Operate, Calibrate, and Quality Assure the Enhanced-NOy Measurement System

The Contractor shall continue operating the enhanced-NOy measurement system at the Beltsville, MD (BEL116) CASTNET site. This includes routine calibrations, remote troubleshooting, QA, and data reporting. The operation of the standard NOy system is covered under CLIN 8 under Task Order 003 Base Operations.

Under this task the contractor shall also continue testing the converters for a configuration that provides the more reliable, accurate data as compared to the CASTNET filterpack, AMoN and MARGA system at Beltsville. This includes re-using the NOx molybdenum oxide converter in-line with the TNx stainless steel converter to capture all reactive nitrogen species. Further testing on the calibration system is also expected.

Finally, the contractor will begin testing the system with a Na₂CO₃ denuder at the Gainesville laboratory to measure HNO₃ by difference. Once the data has been reviewed by EPA, EPA may provide technical direction to install the denuders at the BEL116 site on the enhanced-NOy system.

3. Ammonia Flux Site Characterization Database

The contractor shall work with the TOPO to develop a study plan for characterizing 3 NADP AMoN sites colocated with CASTNET. The three selected based on ambient concentrations, land use types, vegetation, and site access are BVL130, IL, COW137, NC and CHA467, AZ. The contractor shall develop a database that can be used for modeling the bi-directional flux of NH3.

The contractor shall install a sonic anemometer at each site. At CHA467, the contractor shall also install a Campbell data logger for remote polling. The anemometers and data loggers were purchased under Task 007 on EP-W-15-003. The contractor shall also install any meteorological sensors that don't currently exist at CHA467 (2-m temperature probe, and a wetness sensor). Soil temperature and moisture shall be measured at each site using a temperature probe and a soil H2O content reflectometer. Both the soil temperature and moisture sensors should be controlled by the Campbell data logger.

Database development:

Soil and vegetation samples will be collected and/or measured within 1-km of each pilot CASTNET/AMoN site (BVL130, COW137, and CHA467). The location of samples will be based on the soil and vegetation types,

existing on-going or historical measurements, and site access. We will use the current soil (NRCS) and vegetation maps to identify groupings and measurement locations. Additionally, meteorological measurements will be added where necessary. Meteorological measurements will be made following the CASTNET QAPP, with the addition of 3D wind speed and temperature using a sonic anemometer and reported hourly. Task Order 3, Base Program, will be updated to include units for the meteorological measurements.

Table 1 lists the measurements that will be required within 1-km of the site. Before measurement sites are identified, the dominate soil and vegetation types should be identified and quantified. EPA can provide NRCS soil maps and vegetation maps with types identified.

Approximately 30 composite soil samples will be collected and analyzed seasonally for each of the three pilot sites (BVL130, COW137 and CHA467). Individual soil sampling locations will be selected in collaboration with EPA based on maps of the dominant soil types at each site. At each of 15 locations, 5 soil cores will be collected at random within a 1X1 m plot. The sample will be deep enough to capture both the O and A soil horizons. Individual cores will be separated into O and A horizons and the 5 replicate samples will be composited by horizon and measurement location, generating a total of 15 O-horizon samples and 15 A-horizon samples (30 total samples) per pilot site. Soils will be immediately stored under refrigeration and extracted within 72 hours. Samples will be analyzed for extractable NH4+ and pH. For NH4+ analysis, 5 g of field moist soil will be extracted in 20g of 0.01M CaCl2 following standard protocols. Samples will be analyzed by ion chromatography or colorimetry. pH will be determined directly on a 1:5 fresh soil/water slurry. Soil Gravimetric moisture will be determined by weight loss after heating 25 g of soil for 24 hours at 105 °C.

Leaf litter on the soil surface will be collected in the same locations as soil samples during each season, generating a total of 15 samples each season per pilot site. Approximately 50 g of leaf litter will be collected within the corresponding 1X1m soil sampling location. Green leaves will be sampled seasonally from three to five individual trees representing the dominant species. Tree locations will coincide with soil/litter sampling locations where possible. For each tree, approximately 25g of leaves will be sampled from the upper and lower canopy, respectively, using the slingshot method. Litter and leaf samples will be immediately stored under refrigeration. Bulk green leaf and litter samples will be subsampled for analysis of moisture, total N, and NH4+. For NH4+ analysis, fresh material will be ground in liquid nitrogen and 5 grams of material will be extracted in 20 mL of deionized water. Extractions will take place within 72 hours of collection. Extracts will be analyzed for NH4+ using ion chromatography or colorimetry. For total N analysis, material will be dried, ground, and analyzed for total N via combustion/elemental analysis. Moisture content will be determined by weight loss after drying at 60o to a constant weight.

Leaf area index will be measured seasonally at approximately 15 locations, timed in the summer and winter to capture maximum and minimum LAI, using an LAI 2000 plant canopy analyzer. Locations will correspond with soil sampling locations if possible.

In addition to standard CASTNET meteorology, BVL130 and CHA467 will be equipped with a sonic anemometer and sensors for soil moisture and temperature. Sonic anemometer measurements of 3D wind (u, v, w) and temperature will be recorded at 10 hz.

Green: EPA will provide; Blue: Amec will provide

Measuremen t Frequency	Measurement	Time period	Notes	BVL130	COW137	CHA467
,	Canopy Height	Dominate species at start and end of study	LIDAR	LIDAR data exists, but we need to take measurement s of crop canopy height	Existing	Needed
	Vegetation characterizatio n – species type, percentage of each species	Peak leaf out?	NLCD database?	Needed	Needed	Needed
	Vegetation species density – stems per m ² or ha	Peak leaf out	LIDAR measurements	Needed	Needed	Needed
	Surface albedo	Initial	Remote sensing data	Existing	Existing	Existing
	Hydrological group	Initial	NRCS WSS	Existing	Existing	Existing
Initial	Quality Rating	Initial	NRCS WSS	Existing	Existing	Existing
Measurement (or 1-time measurement)	Soil Type – type, percentage of each species	Initial	NRCS WSS	Existing	Existing	Existing
	Soil Characteristics – bulk density, sand/silt/clay, wilt point, field capacity, depth to impervious layer, rooting depth	Initial	NRCS WSS	Existing	Existing	Existing
	Age of Plot	Initial	Ag – how many years has plot been cultivated, forest – when was stand last cleared?	Existing	Existing	?
	Overall slope of site		LIDAR measurements ?	Existing	Existing	Needed
Seasonal	LAI Profiles	Coincide with soil/litter sampling. Measurement s at leaf out, peak LAI, senescence,	Li-COR LAI 2200C	Take measurement at 10 locations	Take measurement s at 10 locations	Take measurement s at 10 locations

		and minimum LAI				
	Bulk leaf tissue [N] and [NH $_4$ ⁺]	At peak LAI	Dominate species	Take measurement s at 10 sites	Take measurement s at 10 sites	Take measurement s at 10 sites
	Litter – depth, composition, total [N] and [NH ₄ ⁺]	After leaf drop	Dominate species at soil measurement sites. Same analysis as bulk leaf tissue.	Take measurement s at 10 sites	Take measurement s at 10 sites	Take measurement s at 10 sites
	Soil chemistry (pH, [NH ₄ +], and [NO ₃ -])	Coincide with vegetation samples	Top two horizons — typically the O (organic) and A (topsoil) horizons for dominate soils/vegetatio n locations.	Take measurement s at 10 sites	Take measurement s at 10 sites	Take measurement s at 10 sites
Hourly	Soil characteristics (moisture, temperature)	Hourly measurement s at 1 location (2 horizons?)	Locations depend on soil types, vegetation and site slope Temperature probe Campbell Scientific 107 Soil moisture Campbell scientific Soil H ₂ O content reflectometer CS650	Take measurement s	Take measurement s	Take measurement s
	Meteorology		Standard suite of CASTNET measurements.	Take measurement s	Take measurement s	Take measurement s

The contractor shall include a technical proposal and cost estimate for the measurements listed below.

The contractor will develop and store all measured data in an Oracle database. Results will be transferred to the EPA database 90 days after measurements are analyzed or recorded.

EPA will provide data from the USDA WSS database for each site where data is available. The contractor will not be required to manage the data provided by EPA.

4. Whiteface Summit Filter Pack

The contractor shall install a filter pack system (including a data logger, pump, flow system) on the roof of the Whiteface research lab at the summit. The filter pack flow system will be automatically switched off when moisture is high (clouds). The installation (equipment, travel, etc.) will be included in this task order. The filter pack analysis, QA and calibrations will be included under Task Order 3 Base Operations.

V. DELIVERABLES AND SCHEDULE

1. Proposal

The contractor shall deliver a Task Order Proposal in accordance with clause B.7 Task Order Ordering Procedures of the contract. The proposal shall be submitted 10 days after receipt of the SOW.

2. Monthly Progress Report

The contractor shall prepare and submit a monthly progress report by the 15th of each month summarizing the progress made, issues encountered or expected, work planned for the next reporting period and costs. These reports shall comply with contract clauses F.3 Reports of Work and F.5 Monthly Progress Report. Reports shall be delivered electronically.

3. Database

The contractor shall deliver a database with valid data and all QA/QC data reported during the field campaign. The database shall be delivered 90 days after the final measurement is taken.

4. Study Plan & SOPs for Site Characterization Study

The contractor shall prepare and submit a formal study plan including measurement and analysis SOPs for the soil and vegetation characterization study by August 30th 2016.

5. Publication

Within 6-months after the final sample is collected, the contractor shall work with the TOPOs and technical advisors to prepare an EPA summary report.

Distribution of Deliverables:

Addressee	Copies
EPA Contracting Officer (Rob Gray)	1
EPA Project Officer (Melissa Puchalski)	1
EPA Alternate (Ralph Baumgardner)	1
EPA Technical Advisor (John T Walker)	1

ATTACHMENT B SUMMARY OF AMOUNTS AND CEILINGS

	Total Funding/Obligation Amount						
Period	This Action		Amount				
Base Period	\$50,000		\$50,000				
Total	\$50,000		\$50,000				

	Total Task Order Ceiling					
Period	This Action		Amount			
Base Period	\$176,419.10		\$176,419.10			
Total	\$176,419.10		\$176,419.10			

NOTE: This task order is hereby incrementally funded. The Contractor exceeds funding at its own risk.

This task order requires \$126,419.1 to be fully funded.

AMENDMENT OF SOLICITATION/MODIFICA	ATION OF CONTRACT		1. CONTRACT ID CODE	PAGE	OF PAGES
2. AMENDMENT/MODIFICATION NO.	3. EFFECTIVE DATE	4. REQ	L UISITION/PURCHASE REQ. NO.	5. PROJECT	NO. (If applicable)
001	See Block 16C	PR-C	AR-17-00075	EP-W-1	6-015
6. ISSUED BY CODE	HPOD	7. ADI	INISTERED BY (If other than Item 6)	CODE	
HPOD US Environmental Protection William Jefferson Clinton Bu 1200 Pennsylvania Avenue, N. Mail Code: 3803R Washington DC 20460	ilding			_	
8. NAME AND ADDRESS OF CONTRACTOR (No., street	county. State and ZIP Code)	I9A	AMENDMENT OF SOLICITATION NO.		-
AMEC ENVIRONMENT & INFRASTRUCATION (No. street Attn: LISA DWYER AMEC FOSTER WHEELER ENVIRONM 751 ARBOR WAY, STE 180 (b)(4) BLUE BELL PA 194221960	CTURE, INC.	9B. × 10/ E.E.	DATED (SEE ITEM 11) MODIFICATION OF CONTRACT/ORDER W-16-015 DATED (SEE ITEM 13)	R NO.	
CODE 038086125	FACILITY CODE	0	7/20/2016		
	11. THIS ITEM ONLY APPI	 LIES TO AMENDM	ENTS OF SOLICITATIONS		
separate letter or telegram which includes a reference THE PLACE DESIGNATED FOR THE RECEIPT OF C virtue of this amendment you desire to change an offereference to the solicitation and this amendment, and 12. ACCOUNTING AND APPROPRIATION DATA (If requise See Schedule	oies of the amendment; (b) By a to the solicitation and amendm OFFERS PRIOR TO THE HOUL r already submitted, such char is received prior to the opening prired)	acknowledging red nent numbers. FA R AND DATE SPE nge may be made hour and date spe Net Inc	eipt of this amendment on each copy of the ILURE OF YOUR ACKNOWLEDGEMENT CIFIED MAY RESULT IN REJECTION OF by telegram or letter, provided each telegran cified.	e offer submitted; TO BE RECEIVE YOUR OFFER If m or letter makes	or (c) By D AT by
			ES SET FORTH IN ITEM 14 ARE MADE IN		
B. THE ABOVE NUMBERED CONTRAC appropriation date, etc.) SET FORTH C. THIS SUPPLEMENTAL AGREEMEN			MINISTRATIVE CHANGES (such as chang OF FAR 43.103(b). TY OF:	es in paying office	2,
D. OTHER (Specify type of modification	and authority)				
X Funding Action Only					
E. IMPORTANT: Contractor X is not.	is required to sign this doc	ument and return	copies to the issi	uing office.	
14. DESCRIPTION OF AMENDMENT/MODIFICATION DUNS Number: 038086125 The purpose of this modifica \$50,000.00.	The second section of the second seco	and the second s	and the second section of the second second section of the second second section of the second s	1) september 2009 (* 10	of
Contracting Officer: Michael Fox, (202)564-2550,	Fox.Michael@epa	.gov			
Contracting Officer's Repres Melissa Puchalski, (202) 343 TOCOR: Melissa Puchalski		i.Melissa	∂epa.gov		
Continued					
Except as provided herein, all terms and conditions of the 15A. NAME AND TITLE OF SIGNER (Type or print)	e document referenced in Item	16A.	retofore changed, remains unchanged and NAME AND TITLE OF CONTRACTING OF hony Terrell		
15B. CONTRACTOR/OFFEROR	15C. DATE SI	GNED 16B.	JNITED STATES OF AMERICA	ELECTRONIC SIGNATURE	16C. DATE SIGNED 11/17/2016
(Signature of person authorized to sign)			(Signature of Contracting Officer)		11/1/2010

 CONTINUATION SHEET
 REFERENCE NO. OF DOCUMENT BEING CONTINUED
 PAGE
 OF

 EP-W-16-015/0010/001
 2
 3

NAME OF OFFEROR OR CONTRACTOR

ITEM NO.	SUPPLIES/SERVICES	QUANTITY		UNIT PRICE	AMOUNT
(A)	(B)	(C)	(D)	(E)	(F)
	LIST OF CHANGES:				
	Reason for Modification : Funding Only Action				
	Obligated Amount for this Modification: \$50,000.00				
	New Total Obligated Amount for this Award:				
	\$100,000.00				
	Incremental Funded Amount changed: from				
	\$50,000.00 to \$100,000.00				
	Buyer changed				
	from Robert A Gray				
	to Michael C Fox				
	from Robert A Gray				
	to Anthony Terrell				
	CHANGES FOR LINE ITEM NUMBER: 1				
	Obligated Amount for this modification: \$50,000.00				
	Incremental Funded Amount changed from \$50,000.00				
	to \$100,000.00				
	NEW ACCOUNTING CODE ADDED:				
	Account code:				
	17-18-C-58D5-102A45-2505-1758DC7005-001				
	Beginning FiscalYear 17				
	Ending Fiscal Year 18				
	Fund (Appropriation) C				
	l				
	Budget Organization 58D5				
	Program (PRC) 102A45				
	Budget (BOC) 2505				
	Job # (Site/Project)				
	Cost Organization				
	DCN-LineID 1758DC7005-001				
	Quantity: 0				
	Amount: \$50,000.00				
	Percent: 28.3416				
	Subject To Funding: N				
	Payment Address:				
	RTP Finance Center				
	US Environmental Protection Agency				
	RTP-Finance Center (AA216-01)				
	109 TW Alexander Drive				
	www2.epa.gov/financial/contracts				
	Durham NC 27711				
	Continued				

 CONTINUATION SHEET
 REFERENCE NO. OF DOCUMENT BEING CONTINUED
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 OF

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NAME OF OFFEROR OR CONTRACTOR

TEM NO.	SUPPLIES/SERVICES	QUANTITY		UNIT PRICE	AMOUNT
(A)	(B)	(C)	(D)	(E)	(F)
	Payment:				
	RTP Finance Center				
	US Environmental Protection Agency				
	RTP-Finance Center (AA216-01)				
	109 TW Alexander Drive				
	www2.epa.gov/financial/contracts				
	Durham NC 27711				
	FOB: Destination				
	Period of Performance: 07/20/2016 to 07/08/2021				
			ı		

	Unio DIFIGATION OF CONTRACT	1. 0	CONTRACT ID CODE	PAGE	OF PAGES
AMENDMENT OF SOLICITATION	MODIFICATION OF CONTRACT	22.94		1	2
2. AMENDMENT/MODIFICATION NO.	3. EFFECTIVE DATE		TION/PURCHASE REQ. NO.	5. PROJECT	NO. (If applicable)
002	See Black 16C		-17-00261	0005	
6. ISSUED BY	CODE HEOD	7. ADMINIS	TERED BY (If other than Item 6)	CODE	<u> </u>
HPOD US Environmental Prot William Jofferson Cli 1200 Pennsylvania Ave Mail Code: 3803R	nton Building				
Mashington DC 20460		ŗ			
8. NAME AND ADDRESS OF CONTRACT	OR (No., street, county, State and ZIP Code)	(x) 9A, AME	NOMENT OF SOLICITATION NO.		*
AMEC ENVIRONMENT & IN Attn: LISA DWYER AMEC FOSTER WHEELER E	FRASTRUCTURE, INC.	98. DAT	ED (SEE ITEM 11)		
'51 ARBOR WAY, STE 18 (b)(4)		x 10A. MC	DDIFICATION OF CONTRACT/ORD	DER NO.	
BLUE BELL PA 19422196	o .	0010			
)206 penn fa 19464170	~		V ED (SEE ITEM 13)		
CODE 039096125	FACILITY CODE		20/2016		
ODE 038086125	11. THIS ITEM ONLY APPL				
Offers must acknowledge receipt of this kems 8 and 15, and returning separate letter or telegram which inclusions at the place have nestignated FOR THE	andod as set forth in Itom 14. The nour and dis amendment prior to the hour and date specificopies of the amendment; (b) By the areference to the solicitation and enrondment RECEIPT OF OFFERS PRIOR TO THE HOUr change an offer already submitted, such chan-	ed in the solic tation of acknowledging receipt ent numbers. FALU: RAND DATE SPECIFI	r as amended , by one of the follow of this amendment on each copy of RE OF YOUR ACKNOWLEDGEME IED MAY RESULT IN REJECTION	NT TO BE RECEIVE OF YOUR OFFER 1	ompleting or (c) By D AT ' by
reference to the solicite lon and this arr	endment, and is received prior to the opening	hour and date specific	od		
12. ACCOUNTING AND APPROPRIATIO		Net Incre		\$11,658.	34
See Schedule	APPLIES TO MODIFICATION OF CONTRACTS		USO TUE OCUTANOTIONED NO.	AR DESCRIBED IN 1	TSM 14
B. THE ABOVE NUMBER appropriation date, etc.	RED CONTRACT/ORDER IS MODIFIED TO R :) SET FORTH IN ITEM 14, PURSUANT TO	EFLECT THE ADMIN THE AUTHORITY OF	ISTRATIVE CHANGES (such as ch FAR 43 103(b).		
	L'AGREEMENT IS ENTERED INTO PURSUA	INT TO AUTHORITY (OF:		
	- ChangesFixed Price				
O. OTHER (Specify type	of modification and authority)				
<u> </u>			1	e issuing office.	
E. IMPORTANT: Contractor	Is not. (x) is required to sign this doc				
14. DESCRIPTION OF AMENDMENTM DUNS Number: 0380861 The purpose of this t		adings, including sale	напомсопиясь забрес плани что	. 100 01 11101	
1.) Revise the states (8 pages) and the re-	ment of work in accordance of work in accordance of work in accordance.	nce with At t proposal	tachment A, Revisedated January 27,	ed Statemer 2017 (13 p	nt of Work bages).
2.) Correct the period	od of performance end d	ate from Ju	ly 8, 2021 to Jul	y 8, 2017.	
3.) Obligate increme	ntal funding in the amo	unt of \$11,	658.94.		
LIST OF CHANGES:					
Continued					
Except as provided herein, all forms and 15A, NAME AND TITLE OF SIGNER (7)	conditions of the document referenced in Item rpe or print)	19 A or 10A, as hereta 16A, NA	ofore changed, remains unchanged ME AND TITLE OF CONTRACTIN	and in full force and G OFFICER (Type o	effect.
Kemn Howell	- Project Manager	Mich	ael C. Fox		
15B, CONTRACTOR/OFFE	15¢, DATĘ S	SIGNED 16B. UN	ITED STATES OF AMERICA		16C, DATE SIGNED
Tronsture of person authoriz		17 9	Cuchail Fax (Signature of Contracting Office	/	01/31/2017
programme of person addrong					

Previous adition unusable

Prescribed by GSA FAR (48 CFR) 53,243

CONTINUATION SHEET	REFERENCE NO. OF DOCUMENT BEING CONTINUED	PAGE	OF	-
	EP-W-16-015/0010/002	2		2

NAME OF OFFEROR OR CONTRACTOR

NO.	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
()	(B)	(C)	(D)	(E)	(F)
	Reason for Modification : Supplemental Agreement				
	for work within scope				
	Period Of Performance End Date changed from		i l		
	08-JUL-21 to 08-JUL-17		1		
	Obligated Amount for this Modification: \$11,658.94			i	
	New Total Obligated Amount for this Award:				
	\$111,658.94		!		
	Incremental Funded Amount changed: from		ļ.		
	\$100,000.00 to \$111,658.94			1	
	NEW ACCOUNTING CORE ADDED			f	
	NEW ACCOUNTING CODE ADDED:				
	Account code:				
	16-17-C-58D5-102A45-2505-1758DC7014-C01				
	Beginning FiscalYear 16				
	Ending Fiscal Year 17				
	Fund (Appropriation) C			-	
	Budget Organization 5805		2	[
	Program (PRC) 102A45				
	Budget (BOC) 2505			i	
	Job # (Site/Project)				
	Cost Organization				
	DCN-LineID 1758DC7014-001	Î			
	Quantity: 0				
	Amount: \$11,658.94		ľ		
	Percent: 6.60866				
	Subject To Funding: N				
	Payment Address:				
	RTP Finance Center				
	US Environmental Protection Agency				
	RTP-Finance Center (AA216-01)				
	109 TW Alexander Drive		1	ļ	
	www2.epa.gov/financial/contracts		1		
	Durham NC 27711				
	Payment:				
	RTP Finance Center				
	US Environmental Protection Agency				
]	RTP-Finance Center (AA216-01)				
ĺ	109 TW Alexander Drive				
	www2.epa.gov/financial/contracts				
	Durham NC 27711				
	FOB: Destination				
	Period of Performance: 07/20/2016 to 07/08/2017			İ	
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AMENDMENT OF SOLICITATION/MODIFICA	ATION OF CONTRACT		CONTRACT ID CODE	PAGE	OF PAGES
2. AMENDMENT/MODIFICATION NO.	3. EFFECTIVE DATE	4. REQ	UISITION/PURCHASE REQ. NO.	5. PROJECT	NO. (If applicable)
003	See Block 16C	PR-0	AR-17-00656		
6. ISSUED BY CODE	HPOD	7. ADN	INISTERED BY (If other than Item 6)	CODE	
HPOD US Environmental Protection William Jefferson Clinton Bu 1200 Pennsylvania Avenue, N. Mail Code: 3803R	ilding				
Washington DC 20460	2 00 1 0000 0	1			
8. NAME AND ADDRESS OF CONTRACTOR (No., street AMEC ENVIRONMENT & INFRASTRUC Attn: LISA DWYER AMEC FOSTER WHEELER ENVIRONM 751 ARBOR WAY, STE 180 (b)(4) BLUE BELL PA 194221960	CTURE, INC.	9B. × 10A EF	AMENDMENT OF SOLICITATION NO. DATED (SEE ITEM 11) . MODIFICATION OF CONTRACT/ORDER -W-16-015 10 . DATED (SEE ITEM 13)	NO.	
CODE 038086125	FACILITY CODE	─ 0 ·	7/20/2016		
	11. THIS ITEM ONLY APPLIES				
separate letter or telegram which includes a reference THE PLACE DESIGNATED FOR THE RECEIPT OF C virtue of this amendment you desire to change an offer reference to the solicitation and this amendment, and 12. ACCOUNTING AND APPROPRIATION DATA (If requires to the solicitation and this amendment). See Schedule 13. THIS ITEM ONLY APPLIES TO M	OFFERS PRIOR TO THE HOUR AN r already submitted , such change r is received prior to the opening hou uired)	ND DATE SPE may be made! ir and date spe Net Inc	CIFIED MAY RESULT IN REJECTION OF Y by telegram or letter, provided each telegram cified.	OUR OFFER If	00
			ES SET FORTH IN ITEM 14 ARE MADE IN		
B. THE ABOVE NUMBERED CONTRAC appropriation date, etc.) SET FORTH C. THIS SUPPLEMENTAL AGREEMEN			MINISTRATIVE CHANGES (such as change OF FAR 43.103(b). 'Y OF:	s in paying office),
D. OTHER (Specify type of modification	and authority)				
X FAR 52.232-22 - Limi	tation of Funds				
E. IMPORTANT: Contractor is not.	is required to sign this docume	nt and return	copies to the issu	ing office.	
14. DESCRIPTION OF AMENDMENT/MODIFICATION The purpose of this modifica	tion is to:				
1.) Obligate incremental fun 2.) Correct the task order c \$63,990.90 from \$176,419.10 with the previous modificati revised proposal dated Janua	eiling amount. The to \$240,410.00. Th on (0002), which n	e ceilin ne ceil:	ng amount is being inc Ing amount should have	reased b	creased
LIST OF CHANGES:					
Reason for Modification : Fu	nding Only Action				
Continued	The second secon				
Except as provided herein, all terms and conditions of the 15A. NAME AND TITLE OF SIGNER (Type or print)	e document referenced in Item 9 A		etofore changed, remains unchanged and in NAME AND TITLE OF CONTRACTING OFF		
		Mic	hael C. Fox		
15B. CONTRACTOR/OFFEROR	15C. DATE SIGNE		JNITED STATES OF AMERICA	ELECTRONIC S:GNATURE	16C. DATE SIGNED
(Signature of person authorized to sign)			(Signature of Contracting Officer)		05/31/2017

NSN 7540-01-152-8070 Previous edition unusable STANDARD FORM 30 (REV. 10-83) Prescribed by GSA FAR (48 CFR) 53.243
 CONTINUATION SHEET
 REFERENCE NO. OF DOCUMENT BEING CONTINUED
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 OF

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NAME OF OFFEROR OR CONTRACTOR

M NO. A)	SUPPLIES/SERVICES	QUANTITY (C)	UNIT (D)	UNIT PRICE (E)	AMOUNT (F)
A)	(B)	(C)	(D)	(上)	(F)
	Total Amount for this Modification: \$63,990.90				
	New Total Amount for this Version: \$240,410.00				
	New Total Amount for this Award: \$240,410.00				
	Obligated Amount for this Modification: \$30,000.00				
	New Total Obligated Amount for this Award:				
	\$141,658.94				
	Incremental Funded Amount changed: from				
	\$111,658.94 to \$141,658.94				
	CHANGES FOR LINE ITEM NUMBER: 1				
	Total Amount changed				
	from \$176,419.10 to \$240,410.00				
	Obligated Amount for this modification: \$30,000.00				
	Incremental Funded Amount changed from				
	\$111,658.94 to \$141,658.94				
	CHANGES FOR DELIVERY LOCATION: OAR/OAP				
	Amount changed from \$176,419.10 to \$240,410.00				
	Amount changed from \$178,419.10 to \$240,410.00				
	NEW ACCOUNTING CODE ADDED:				
	Account code:				
	17-18-C-58D5-102A45-2505-1758DC7042-001				
	Beginning FiscalYear 17				
	Ending Fiscal Year 18				
	Fund (Appropriation) C				
	Budget Organization 58D5				
	Program (PRC) 102A45				
	Budget (BOC) 2505				
	Job # (Site/Project)				
	Cost Organization				
	DCN-LineID 1758DC7042-001				
	Quantity: 0				
	Amount: \$30,000.00				
	Percent: 17.00496				
	Subject To Funding: N				
	Payment Address:				
	RTP Finance Center				
	US Environmental Protection Agency				
	RTP-Finance Center (AA216-01)				
	109 TW Alexander Drive				
	www2.epa.gov/financial/contracts				
	Durham NC 27711				
	Duffidit NC 27711				
	Continued				

 CONTINUATION SHEET
 REFERENCE NO. OF DOCUMENT BEING CONTINUED
 PAGE
 OF

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NAME OF OFFEROR OR CONTRACTOR

ITEM NO.	SUPPLIES/SERVICES	QUANTITY UNIT UNIT PRICE		AMOUNT		
(A)	(B)	(C) (D		(F)		
	Payment:	+ +	1			
	RTP Finance Center					
	US Environmental Protection Agency					
	RTP-Finance Center (AA216-01)					
	109 TW Alexander Drive					
	www2.epa.gov/financial/contracts					
	Durham NC 27711					
	FOB: Destination					
	Period of Performance: 07/20/2016 to 07/08/2017					

AMENDMENT OF SOLICITATION/MODIFIC	ATION OF CONTRACT		1. CONTRACT ID CODE	PAGE	OF PAGES
2. AMENDMENT/MODIFICATION NO.	3. EFFECTIVE DATE	4. RE	 QUISITION/PURCHASE REQ. NO.	5. PROJECT	NO. (If applicable)
P00004	See Block 16C				
6. ISSUED BY CODE	HPOD	7. AC	MINISTERED BY (If other than Item 6)	CODE	
HPOD US Environmental Protection William Jefferson Clinton Bo 1200 Pennsylvania Avenue, N Mail Code: 3803R Washington DC 20460	uilding			_	
8. NAME AND ADDRESS OF CONTRACTOR (No., stree	t county State and ZIP Code)		A. AMENDMENT OF SOLICITATION NO.		
AMEC ENVIRONMENT & INFRASTRU Attn: LISA DWYER AMEC FOSTER WHEELER ENVIRONM 751 ARBOR WAY, STE 180 (b)(4) BLUE BELL PA 194221960	CTURE, INC.	(X) 9E X 10 E 0	A. MODIFICATION OF CONTRACT/ORDER N $P-W-16-015$ 010	0.	
CODE 038086125	FACILITY CODE	7 1	7/20/2016		
	11. THIS ITEM ONLY APPLIES TO) AMEND	MENTS OF SOLICITATIONS		
separate letter or telegram which includes a reference THE PLACE DESIGNATED FOR THE RECEIPT OF virtue of this amendment you desire to change an offereference to the solicitation and this amendment, and 12. ACCOUNTING AND APPROPRIATION DATA (If received Schedule 13. THIS ITEM ONLY APPLIES TO M	OFFERS PRIOR TO THE HOUR AND er already submitted , such change may is received prior to the opening hour au uired) N∈	DATE SP y be made nd date sp et Dec	ECIFIED MAY RESULT IN REJECTION OF YO by telegram or letter, provided each telegram o lecified.	UR OFFER If or letter makes	4 4
CHECK ONE A. THIS CHANGE ORDER IS ISSUED ORDER NO. IN ITEM 10A.	PURSUANT TO: (Specify authority) Th	HE CHAN	GES SET FORTH IN ITEM 14 ARE MADE IN T	HE CONTRAC	Т
B. THE ABOVE NUMBERED CONTRA appropriation date, etc.) SET FORT C. THIS SUPPLEMENTAL AGREEMEN			MINISTRATIVE CHANGES (such as changes of OF FAR 43.103(b). ITY OF:	in paying office	,
D. OTHER (Specify type of modification X FAR 52.232-22 - Limit	1.2				
				The second	
E. IMPORTANT: Contractor is not. 14. DESCRIPTION OF AMENDMENT/MODIFICATION	is required to sign this document a		- 1		
The purpose of this modificathis task order. LIST OF CHANGES: Reason for Modification: Furobligated Amount for this Modification of the Modificat	nding Only Action dification: -\$56,31 or this Award: \$85, anged: from : 1	3 • 4 4 3 4 5 • 5 10A, as h	eretofore changed, remains unchanged and in f NAME_AND_TITLE OF CONTRACTING OFFICE	full force and el	fect.
ALD CONTRACTOR (CTTTTC)	I.a. 2		chael C. Fox		LAGO BATE CICUTE
15B. CONTRACTOR/OFFEROR (Signature of person authorized to sign)	15C. DATE SIGNED			EFCTRONIC S:GNATURE	16C. DATE SIGNED 11/03/2017

 CONTINUATION SHEET
 REFERENCE NO. OF DOCUMENT BEING CONTINUED EP-W-16-015/0010/P00004
 PAGE 2
 2
 2

NAME OF OFFEROR OR CONTRACTOR

ITEM NO.	SUPPLIES/SERVICES	QUANTITY	LINIT	UNIT PRICE	AMOUNT
(A)	(B)	(C)	(D)	(E)	(F)
-	Obligated Amount for this modification:			, ,	
	-\$56,313.44				
	Incremental Funded Amount changed from				
	\$141,658.94 to \$85,345.50				
	CHANGES FOR ACCOUNTING CODE:				
	17-18-C-58D5-102A45-2505-1758DC7005-001				
	Amount changed from \$50,000.00 to \$23,686.56				
	CHANGES FOR ACCOUNTING CODE:				
	17-18-C-58D5-102A45-2505-1758DC7042-001				
	Amount changed from \$30,000.00 to \$0.00				
	Payment:				
	RTP Finance Center				
	US Environmental Protection Agency				
	RTP-Finance Center (AA216-01)				
	109 TW Alexander Drive				
	www2.epa.gov/financial/contracts				
	Durham NC 27711				
	FOB: Destination				
	Period of Performance: 07/20/2016 to 07/08/2017				
NCN 7540 04 45	1 (A) (A) (A) (A) (A) (A) (A) (A) (A) (A)		1		ODTIONAL SORMANO (4.00)

AMENDMENT OF SOLICITATION/MODIFIC	ATION OF CO	NTRACT	1. CONTRACT ID CODE	PAGE	OF PAGES
2. AMENDMENT/MODIFICATION NO.	3. EFFECTIVE I	DATE 4	L 4. REQUISITION/PURCHASE REQ. NO.	5. PROJECT	NO. (If applicable)
P00005	See Bloc	k 16C		EP-W-1	6-015
6. ISSUED BY CODE	HPOD	- 3	7. ADMINISTERED BY (If other than Item 6)	CODE	
HPOD US Environmental Protection William Jefferson Clinton Bu 1200 Pennsylvania Avenue, N Mail Code: 3803R	uilding			_	
Washington DC 20460			les surrigures de constitución de		
8. NAME AND ADDRESS OF CONTRACTOR (No., stree WOOD ENVIRONMENT & INFRASTRUCTI Attn: JOSEPH FARRELL 751 Arbor Way Ste 180 Blue Bell PA 194221972		<u>.</u>	9A. AMENDMENT OF SOLICITATION NO. 9B. DATED (SEE ITEM 11) 10A. MODIFICATION OF CONTRACT/ORDER NEP-W-16-015 1001 10B. DATED (SEE ITEM 13)	IO.	
CODE 038086125	FACILITY CODI		06/22/2017		
277 255 445 41 31 12 DECEMBER	11. THIS ITE	 M ONLY APPLIES TO AM	 ENDMENTS OF SOLICITATIONS		
separate letter or telegram which includes a reference THE PLACE DESIGNATED FOR THE RECEIPT OF virtue of this amendment you desire to change an off reference to the solicitation and this amendment, and	ppies of the amend e to the solicitation OFFERS PRIOR T er already submitte l is received prior to	ment; (b) By acknowledg and amendment number FO THE HOUR AND DAT ed, such change may be to the opening hour and d	ing receipt of this amendment on each copy of the ores. FAILURE OF YOUR ACKNOWLEDGEMENT TO ESPECIFIED MAY RESULT IN REJECTION OF YOur made by telegram or letter, provided each telegram at especified.	ffer submitted; DE RECEIVE OUR OFFER If or letter makes	or (c) By D AT by
12. ACCOUNTING AND APPROPRIATION DATA (If required See Schedule	juirea)	Net	Decrease: -	\$19 , 509.	. 34
13. THIS ITEM ONLY APPLIES TO M	ODIFICATION OF	CONTRACTS/ORDERS.	IT MODIFIES THE CONTRACT/ORDER NO. AS DE	SCRIBED IN IT	ΓEM 14.
	CT/ORDER IS MC H IN ITEM 14, PUI	DDIFIED TO REFLECT TH RSUANT TO THE AUTHO	CHANGES SET FORTH IN ITEM 14 ARE MADE IN T HE ADMINISTRATIVE CHANGES (such as changes DRITY OF FAR 43.103(b).		
D. OTHER (Specify type of modification	and authority)				
X FAR 52.232-22 Limita	**	Funds			
E. IMPORTANT: Contractor 🗵 is not.	20.00		return copies to the issuin	g office.	
14. DESCRIPTION OF AMENDMENT/MODIFICATION DUNS Number: 038086125					0.24.5
The purpose of this modificathis task order.	ttion is t	.o de-obligat	e runding in the amount of	\$19,50	9.34 Irom
TOCOR: Macy Taylor LIST OF CHANGES:					
Reason for Modification: Fur Obligated Amount for this Mc New Total Obligated Amount f	dificatio	on: -\$19,509.			
Incremental Funded Amount ch \$270,029.00 to \$250,519.66		from			
Continued Except as provided herein, all terms and conditions of the second secon	he document refer	enced in Item 9 A or 10A	as heretofore changed, remains unchanged and in	full force and e	ffect.
15A. NAME AND TITLE OF SIGNER (Type or print)	Soument reien	5550 (Gill 5 A 61 10A,	16A. NAME AND TITLE OF CONTRACTING OFFI Michael C. Fox	MATERIAL MAT	5 AV.
15B. CONTRACTOR/OFFEROR		15C. DATE SIGNED	16B. UNITED STATES OF AMERICA	EL FOTRONIC S:GNATURE	16C. DATE SIGNED
(Signature of person authorized to sign)			(Signature of Contracting Officer)		11,01,2010

 CONTINUATION SHEET
 REFERENCE NO. OF DOCUMENT BEING CONTINUED EP-W-16-015/1001/P00005
 PAGE EP-W-16-015/1001/P00005
 PAGE 2
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 2

NAME OF OFFEROR OR CONTRACTOR

WOOD ENVIRONMENT & INFRASTRUCTURE SOLUTIONS, INC.

TEM NO. (A)	SUPPLIES/SERVICES (B)	QUANTITY (C)	UNIT (D)	UNIT PRICE (E)	AMOUNT (F)
	CHANGES FOR LINE ITEM NUMBER: 1				
	Obligated Amount for this Modification:				
	-\$19,509.34 Incremental Funded Amount changed from				
	\$270,029.00 to \$250,519.66				
	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1				
	CHANGES FOR ACCOUNTING CODE:				
	18-19-C-58D5-000A45-2505-1858DC8037-001				
	Amount changed from \$74,543.88 to \$55,034.54				
	Payment: RTP Finance Center				
	US Environmental Protection Agency				
	RTP-Finance Center (AA216-01)				
	109 TW Alexander Drive				
	www2.epa.gov/financial/contracts				
	Durham NC 27711				
	Period of Performance: 07/09/2017 to 07/08/2018				

s	OLICITATION/CO					OAR-17		2	1	1 7
2 CONTRACT NO		TO COMPLETE BLO	CKS 12, 17, 23, 24 (3, AWARD/	4, ORDER NUMBER	1.10	OAK I.		6. SOLICITATION NUMBER		B. SOLICITATIO
2.CONTRACT NO EP-W-16-	-015		EFFECTIVE DATE 12/20/201						la mesera au	ISSUE DATE
	R SOLICITATION RMATION CALL:	a.NAME Michael	Fox			TELEPHONE 202-564	-2550		ET	NE DÂTE/LOCAL TIME
a. (SSUEO BY			CODE	HPOD .	10. THIS ACOU	al noitial			J SET ASIDE:	% FOR:
HPOD			_		☐ SMALL BUS		☐ (wos	en-owned swall busin (a) Eugible under the		no.
	conmental Pro				☐ HUBZONE BUSINESS		SMA)	L PUSINESS PROGRAM	N	aics:541620
	Jefferson C.		_		☐ SERVICE4		□ 8(A)			ZE STANDARO; \$15
	nnsylvania A ie: 3803R	venue, N. V	٧.		VETERAN- SMALL BU				SI	ZE STANDARD: YIV
	on DC 20460				347422 60	511203				•
II. DELIVERY F	OR FOR DESTINA- 12	DISCOUNT TERMS			☐ 13a, THIS			13b, RATING		
MARKEO	SS BLOCK IS				RATE	O ORDER UN	DER	14, METHOD OF SOLIC	NITATION	<u> </u>
SEE SCI	HEDULE				OPAS	(15 CFR 700)]if6 🗆	RFP
is, DELIVER TO		CODE	OAR/OAQP	S/CORE	16, ADMINISTE	RED BY			CODE	PÓD
OAR/OAQE	PS/CORE				HPOD					
	conmental Pr	otection A	gency					rotection Ag		
	de: C404-02							Clinton Buil		
	Alexander Dr	ive			1	-		Avenue, N. W		
Durham N	NC 27711				Mail Co Washing			n		
17a, CONTRACT	osu cone lo	38086125	FACILITY		18a, PAYMENT	•	10	<u> </u>	CODE bo	P FMC
OFFEROR			CODE						<u> </u>	11 1110
NEC EN	TRANSPIE C	TAIRD A CHOILCE	אווא שמואי		non ri-		antav			
	'IRONMENT & : SA DWYER	INERASTRUCT	URE, INC.		RTP Fir			rotection Ag	encv	
	TER WHEELER	ENVIRONMEN	IT & I					(AA216-01)	,	
	R WAY, STE				109 TW	Alexan	der D	rive		
BLUE BEL	L PA 194221	960			www2.ep	a.gov/	finan	cial/contrac	ts	
					Durham	NC 277	11			
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2 of 19. ITEM NO. 22. UNIT 20 21 23. UNIT PRICE 24. AMOUNT SCHEDULE OF SUPPLIES/SERVICES QUANTITY \$7,953.00. This is a Time-and-Materials (T&M) task order with a total ceiling price of \$7,953.00, which the Contractor is not authorized to exceed. The Contractor exceeds at its own risk. Contracting Officer: Michael Fox, (202)564-2550, Fox.Michael@epa.gov Contracting Officer's Representative (COR) for this task order: Melissa Puchalski, (202) 343-9882, puchalski.melissa@epa.gov Alternate COR: Mark Evangelista, (919) 541-2803, Evangelista.Mark@epa.gov TOCOR: MRURY02 Period of Performance: 12/20/2016 to 07/08/2017 0001 Prepare U.S./Canada Progress Report 7,953.00 Award Type: Time-and-materials Accounting Info: 16-17-B-53G3-101A46-2505-1753GP7002-001 BFY: 16 EFY: 17 Fund: B Budget Org: 53G3 Program (PRC): 101A46 Budget (BOC): 2505 DCN - Line ID: 1753GP7002-001 Continued ... 32a. QUANTITY IN COLUMN 21 HAS BEEN INSPECTED RECEIVED ☐ ACCEPTED, AND CONFORMS TO THE CONTRACT, EXCEPT AS NOTED: 32b, SIGNATURE OF AUTHORIZED GOVERNMENT REPRESENTATIVE 32c, DATE 32d, PRINTED NAME AND TITLE OF AUTHORIZED GOVERNMENT REPRESENTATIVE 32e. MAILING ADDRESS OF AUTHORIZED GOVERNMENT REPRESENTATIVE 32f, TELEPHONE NUMBER OF AUTHORIZED GOVERNMENT REPRESENTATIVE 32g. E-MAIL OF AUTHORIZED GOVERNMENT REPRESENTATIVE 33. SHIP NUMBER 34. VOUCHER NUMBER 35. AMOUNT VERIFIED 36. PAYMENT 37. CHECK NUMBER CORRECT FOR COMPLETE PARTIAL. FINAL PARTIAL FINAL 38. S/R ACCOUNT NUMBER 39. S/R VOUCHER NUMBER 40. PAID BY 41a. I CERTIFY THIS ACCOUNT IS CORRECT AND PROPER FOR PAYMENT 42a. RECEIVED BY (Print) 41c, DATE 416. SIGNATURE AND TITLE OF CERTIFYING OFFICER 42b, RECEIVED AT (Location) 42c, DATE REC'D (YY/MM/DD) 42d. TOTAL CONTAINERS

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CONTINUATION SHEET	EP-W-16-015/0011	3	7

NAME OF OFFEROR OR CONTRACTOR

M NO. (A)	SUPPLIES/SERVICES (B)	QUANTITY (C)	UNIT (D)	UNIT PRICE	AMOUNT (F)
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Title:

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Contract #:

Task Order #:

Period of Performance:

Prepare US/Canada Progress Report

Amec Foster Wheeler

EP-W-16-015

011

12/20/2016 to 07/08/2017

EPA Key Personnel

Task Order Project Officer (TOPO)/Contract Level Project Officer (PO):

Melissa Puchalski Clean Air Markets Division (OAP/OAR/CAMD) 1200 Pennsylvania Ave., NW Mail Code 6204M Washington, DC 20460 phone: (202) 343-9882

email: Puchalski.Melissa@epa.gov

Alternate TOPO:

Mark Evangelista Air Quality Assessment Division (OAR/OAQPS/AQAD) Mail Drop C304-04

Research Triangle Park, NC 27711

Phone: (919) 541-2803

Email: Evangelista.Mark@epa.gov

Contracting Officer (CO):

Mike Fox

Contracting Officer

Administrative Contract Service Center

1200 Pennsylvania Ave N.W.

Mail Code 3803R Washington DC 20460

phone: (202) 564-2550 email: Fox.Michael@epa.gov

STATEMENT OF WORK

I. INTRODUCTION

The Clean Air Status and Trends Network (CASTNET) is a long-term environmental monitoring network that measures changes in ambient air quality and assesses atmospheric deposition over broad geographic regions of the U.S. (https://www.epa.gov/castnet). Operating since 1987, CASTNET has evolved into a robust regional monitoring program which currently consists of approximately 95 monitoring stations nationwide. The Environmental Protection Agency (EPA) coordinates the operation of the network in cooperation with numerous federal, tribal, state and local partners.

The primary monitoring objectives of CASTNET are to:

- Provide high quality data on atmospheric deposition, rural ground level ozone and other forms of atmospheric pollution;
- Support the primary and secondary ozone NAAQS and provide data on NAAQS compliance in rural areas;
- Monitor the status and trends in regional air quality and atmospheric deposition;
- Assess and report on geographic patterns and long-term, temporal trends in ambient air pollution and atmospheric deposition;
- Improve our understanding of PM and ozone formation;
- Validate and improve atmospheric models;
- Provide data for health-based research and epidemiology studies;
- · Assess the effectiveness of EPA's emission reduction programs; and
- · Support science and ecosystem studies.

CASTNET sites measure weekly average concentrations of sulfate (SO₄²-), nitrate (NO₃-), ammonium (NH₄+), sulfur dioxide (SO₂), nitric acid (HNO₃), chloride (Cl⁻) and the base cations (Na⁺, K⁺, Mg²⁺ and Ca²⁺) using a 3-stage filter pack. In addition, each site may make ancillary measurements, including hourly ozone (O₃), hourly meteorology, ammonia (NH₃) gas using passive devices, and trace-level gases. Trace-level gas monitors include reactive oxidized nitrogen (NO₂), nitric oxide (NO), sulfur dioxide (SO₂) and carbon monoxide (CO). CASTNET O₃, meteorological, and trace gas measurements follow the requirements in the Code of Federal Regulations (CFR) and EPA's Quality Assurance Handbook.

II. PURPOSE

The primary purpose of this task order is to prepare the 2016 Canada-United States Air Quality Agreement Progress Report. The Task Order Project Officer shall provide technical direction for performance of specific tasks under this task order.

III. CONTRACT LEVEL STATEMENT OF WORK REFERENCE

The tasks to be performed under this task order are consistent with the activities authorized in CLIN 22 of the contract's Statement of Work.

IV. TECHNICAL DIRECTION

1. Prepare a Technical Proposal & Cost Estimate

The Contractor shall prepare a Task Order Proposal in accordance with the terms and conditions of contract clauses B.2 entitled Fixed Rates for Services – Indefinite delivery/Indefinite quantity contract.

2. Prepare the 2016 Canada-United States Air Quality Agreement Progress Report.

The contractor shall provide 3 design concepts for cover page and style sheets for interior pages of report i.e., inside grids, for review by EPA. One cover design and inside grid to be selected for the 2016 report by EPA. Note that the EPA may request slight modifications to the selected cover design and inside grid. Previous version of the Report (2014) will be provided as an example. The Contractor shall prepare concepts, covers, and inside grids with similar appearance to the 2014 Report. The content of the 2016 report will be provided to the Contractor by EPA as a Word document including source data for graphs in Excel format) and tables, and accompanying text

Once a concept, cover, and inside grid have been selected by EPA, the Contractor shall prepare the 2016 report utilizing the data and text provided by EPA. The Contractor shall create the final graphics (charts and tables) for the 2016 Report from the data provided by EPA. The Contractor may use the EPA-provided graphics as a guide. The graphics created by the Contractor shall include the same data format and depiction as the graphics provided by EPA.

The Contractor shall research and identify photos (10-15) to include in the 2016 report for review by EPA. If necessary, revise photos selected and purchase photo rights, if required.

EPA has estimated 20 labor hours for contract alterations after the author reviews the draft and proofing to prepare the final Report. This cost shall only be charged if needed.

3. Travel to Meetings

None anticipated.

V. DELIVERABLES AND SCHEDULE

1. Proposal

The contractor shall deliver a Task Order Proposal in accordance with clause B.7 Task Order Ordering Procedures of the contract. The proposal shall be submitted 10 days after receipt of the SOW.

2. Monthly Progress Report

The contractor shall prepare and submit a monthly progress report by the 15th of each month summarizing the progress made, issues encountered or expected, work planned for the next reporting period and costs. These reports shall comply with contract clauses F.3 Reports of Work and F.5 Monthly Progress Report. Reports shall be delivered electronically.

3. Report

The 2014 Report will be provided as an example to the Contractor by EPA. The 2016 Report will be a shorter and more condensed version of the 2014 Report; page total of the 2016 Report will be determined upon approval of the concept, cover, and inside grid. The format of the Report shall be PDF. The Contractor will create a final high resolution PDF and transfer it to DVD. No hardcopies of the Report will be required. All (layered) source Adobe Photoshop CS4 files shall be provided to EPA. All fonts shall be provided to EPA.

Distribution of Deliverables:

Addressee	Copies
EPA Contracting Officer (Mike Fox)	1
EPA Project Officer (Melissa Puchalski)	1
EPA Alternate (Mark Evangelista)	1

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			108. DATED (SEE ITEM 13)		
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STANDARD FORM 30 (ReV. 10-83) Prescribed by GSA FAR (48 CFR) 53.243

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NAME OF OFFERER OR CONTRACTOR
AMEC ENVIRONMENT & INFRASTRUCTURE, INC

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8. NAME AND ADDRESS OF CONTRACTOR (No., stree AMEC ENVIRONMENT & INFRASTRU Attn: LISA DWYER AMEC FOSTER WHEELER ENVIRONM 751 ARBOR WAY, STE 180 (b)(4) BLUE BELL PA 194221960	CTURE, INC.	98 × 10 0	. AMENDMENT OF SOLICITATION NO. . DATED (SEE ITEM 11) A. MODIFICATION OF CONTRACT/ORDER $P-W-16-015$ 0.11 B. DATED (SEE ITEM 13)	R NO.	
CODE 038086125	FACILITY CODE	$\overline{}$	2/19/2016		
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separate letter or telegram which includes a reference THE PLACE DESIGNATED FOR THE RECEIPT OF virtue of this amendment you desire to change an offereference to the solicitation and this amendment, and 12. ACCOUNTING AND APPROPRIATION DATA (If register Schedule	to the solicitation and amenda OFFERS PRIOR TO THE HOU or already submitted, such cha is received prior to the opening uired)	ment numbers. FA JR AND DATE SPE ange may be made g hour and date sp Net Dec	ECIFIED MAY RESULT IN REJECTION OF \ by telegram or letter, provided each telegrar ecified.	TO BE RECEIVE YOUR OFFER If m or letter makes	DAT by
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15B. CONTRACTOR/OFFEROR	15C. DATE S		UNITED STATES OF AMERICA	EL FETRONIC S:GNATURE	16C. DATE SIGNED 07/26/2017
(Signature of person authorized to sign)		1 2	(Signature of Contracting Officer)		0 1, 20, 2011

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NAME OF OFFEROR OR CONTRACTOR

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	Amount changed from \$4,953.00 to \$1,544.97				
	Payment: RTP Finance Center				
	US Environmental Protection Agency				
	RTP-Finance Center (AA216-01)				
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	www2.epa.gov/financial/contracts				
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	Melissa Pu	chalski, (202) 343	3-9882,			ļ				
	puchalski.	melissa@epa.gov						-		
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	Gregory Be	achley, (202)343-9	621,							
	Beachley.G	regory@epa.gov				ĺ		Ì		
	TOCOR: Mel	issa Puchalski			ľ	Î		1		
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41a. I CERTIFY	THIS ACCOUNT IS C	CORRECT AND PROPER FOR PAY	MENT		42s. RECERV	ED BY (Pri	ni)	×		
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NAME OF OFFEROR OR CONTRACTOR

(NO. A)	8UPPLIEWSERVICES (B)	QUANTITY (C)	(D)	UNIT PRICE (E)	AMOUNT (F)
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Title: Characterization of reduced nitrogen at IMPROVE and CSN

monitoring sites

Contractor: Amec Foster Wheeler

Contract #: EP-W-16-015

Task Order #: 0012

Period of Performance: 3/10/2017 to 7/8/2017

EPA Key Personnel

Task Order Project Officer (TOPO)/Contract Level Project Officer (PO):

Melissa Puchalski

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Contracting Officer (CO):

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Contracting Officer

Administrative Contract Service Center

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Washington DC 20460

phone: (202) 564-2550

email: fox.michael@epa.gov

STATEMENT OF WORK

I. INTRODUCTION

The Clean Air Status and Trends Network (CASTNET) is a long-term environmental monitoring network that measures changes in ambient air quality and assesses atmospheric deposition over broad geographic regions of the U.S. (https://www.epa.gov/castnet). Operating since 1987, CASTNET has evolved into a robust regional monitoring program which currently consists of approximately 95 monitoring stations nationwide. The Environmental Protection Agency (EPA) coordinates the operation of the network in cooperation with numerous federal, tribal, state and local partners.

The primary monitoring objectives of CASTNET are to:

- Provide high quality data on atmospheric deposition, rural ground level ozone and other forms of atmospheric pollution;
- Support the primary and secondary ozone National Ambient Air Quality Standards (NAAQS) and provide data on NAAQS compliance in rural areas;
- Monitor the status and trends in regional air quality and atmospheric deposition;
- Assess and report on geographic patterns and long-term, temporal trends in ambient air pollution and atmospheric deposition;
- Improve our understanding of Particulate Matter (PM) and ozone formation;
- Validate and improve atmospheric models;
- Provide data for health-based research and epidemiology studies;
- Assess the effectiveness of EPA's emission reduction programs; and
- Support science and ecosystem studies.

CASTNET sites measure weekly average concentrations of sulfate (SO₄²⁻), nitrate (NO₃⁻), ammonium (NH₄⁺), sulfur dioxide (SO₂), nitric acid (HNO₃), chloride (Cl⁻) and the base cations (Na⁺, K⁺, Mg²⁺ and Ca²⁺) using a 3-stage filter pack. In addition, each site may make ancillary measurements, including hourly ozone (O₃), hourly meteorology, ammonia (NH₃) gas using passive devices, and trace-level gases. Trace-level gas monitors include reactive oxidized nitrogen (NOy), nitric oxide (NO), sulfur dioxide (SO₂) and carbon monoxide (CO). CASTNET O₃, meteorological, and trace gas measurements follow the requirements in the Code of Federal Regulations (CFR) and EPA's Quality Assurance Handbook.

II. Background

The Interagency Monitoring of Protected Visual Environments (IMPROVE) and Chemical Speciation (CSN) networks have provided two decades of routine particulate matter speciation data that support regional haze and PM NAAQS programs. The Clean Air Status and Trends Network (CASTNET) and National Atmospheric Deposition Program (NADP) have provide routine measurements of particulate, gaseous and wet deposition to support acid deposition programs. Over this period the chemical composition of the ambient atmosphere has changed markedly from one dominated by nitrate, sulfate and carbonaceous aerosols, and their associated precursor gases (NO_x, SO_x, VOCs, SVOCs), to an atmospheric mixture that includes a significant amount of reduced inorganic nitrogen – particulate ammonium (NH₄⁺) and its precursor gas, ammonia (NH₃). The magnitude of this change is reflected by a nationwide shift in the atmospheric nitrogen budget from one dominated by inorganic oxidized compounds, to one where reduced inorganic nitrogen species (NH_x = NH₃ + NH₄⁺) now have similar or greater concentrations. Total atmospheric nitrogen compounds are still primarily in inorganic forms, but have significant contributions from organically bound nitrogen (both reduced and oxidized

forms). Looking forward, the shift to larger relative contributions of atmospheric reduced inorganic nitrogen is projected to continue as existing rules and technologies continue to decrease NOx emissions from the transportation and energy generation sectors with an expected modest increase in NH₃ emissions. As the atmospheric emissions and composition evolve in response to rules, our networks must evolve to best inform decision makers to address such questions as:

- 1. What atmospheric species and emission sources contribute to PM, regional haze and nitrogen deposition?
- 2. What options in emissions reductions are available to reduce PM, regional haze and nitrogen deposition?

To answer these questions, it becomes necessary to characterize reduced nitrogen emission sources and atmospheric composition. Our networks are relatively well positioned to characterize inorganic oxides of nitrogen, but poorly positioned to characterize the increasingly dominant reduced component of atmospheric nitrogen. This severe limitation is affecting our ability to understand and mitigate the causes of excess PM, haze and nitrogen deposition, in which reduced nitrogen compounds are playing an increasingly important role.

III. PURPOSE

The primary purpose of this task order is to characterize reduced nitrogen ($NH_x = NH_3 + NH_4^+$) using existing network methodologies as a cost-effective, efficient way to characterize a significant contributor to PM formation, visibility degradation, and total nitrogen deposition. This study is a follow-on to the study performed by Chen et. al. (2014) in the western United States. This study will demonstrate if acid-impregnated filters within the IMPROVE module and the CSN Super Speciation Air Sampling System (SASS) can provide accurate NH_x concentrations in humid climates with low to moderate ambient NH_3 concentrations (Duke Forest, North Carolina and Gainesville, Florida) for approximately six months. The 1:3 sample schedule will be maintained for the CSN and IMPROVE samplers while a URG Annular Denuder System (ADS) will be used as a reference method on the same 1:3 day schedule at the two locations.

Objectives of the study:

- Test the NH_x monitoring method in hot and humid environments with low to moderate NH₃ concentrations.
- Assess sources of uncertainty in the measurement
- Develop standard sampling protocols that can be employed in a routine network.

IV. CONTRACT LEVEL STATEMENT OF WORK REFERENCE

The tasks to be performed under this task order are consistent with the activities authorized in CLIN 22 of the contract's Statement of Work.

V. TECHNICAL DIRECTION

1. Prepare a Technical Proposal & Cost Estimate

The Contractor shall prepare a Task Order Proposal in accordance with the terms and conditions of contract clauses B.2 entitled Fixed Rates for Services – Indefinite delivery/Indefinite quantity contract.

2. Install and Calibrate Measurement Systems

The Contractor shall install a CSN Super SASS sampler, an IMPROVE sampler, a URG ADS sampling system and an Ammonia Monitoring Network (AMoN) sampler at their Gainesville facility. The CSN and IMPROVE

sampling systems will be provided by EPA. The AMoN shelter and samples will be provided and analyzed by NADP.

The IMPROVE system will consist of a 6ft inlet with a PM_{2.5} cyclone. There will be one module used on the IMPROVE sampler for measuring NH_x. The module will include a phosphorous-acid (H₃PO₃)-impregnated cellulose filter (37 mm) to capture NH_x. The IMPROVE sampler operates with a flow rate of 22.8 Liters per minute (L/min) at local temperature and pressure. Flow rate and temperature are recorded every 15 minutes.

The CSN Super SASS sampler will consist of 2 channels including a magnesium oxide (MgO)-coated denuder followed by a nylon filter and a second channel with a H₃PO₃-impregnated cellulose filter (47 mm). Each channel shall be set to a flow rate of 6.7 L/min. The contractor shall follow the setup and operational procedures described in the SOP for the MetOne Super SASS (https://www3.epa.gov/ttnamti1/files/spectraining/MetOneSASSFOM.pdf).

The URG ADS denuder/filter pack system shall include a PM_{2.5} cyclone, a sodium carbonate (Na₂CO₃) denuder to remove HNO₃ followed by H₃PO₃-coated denuder, a nylon filter, and a back-up H₃PO₃-coated denuder to capture any volatilized NH₃ The acid-coated denuders shall be coated and extracted following EPA's method found here: https://www3.epa.gov/ttn/amtic/files/ambient/pm25/spec/RTIDenudersCaptureAmmFINAL.pdf. The flow rate shall be set to 16.7 L/min. Duplicate denuder systems may be run to estimate precision of the reference sampler.

The Contractor shall calibrate the flow system for the SASS, IMPROVE and URG sampling systems prior to study, once during the 6-month sampling period (i.e. after 3-months), and at the completion of the study. Routine monthly leak checks shall be performed on each sampling system.

3. Preparing and Extracting Samples

The contractor shall prepare H₃PO₃-impregnated filters (37 mm cellulose and 47 mm cellulose) for the Duke Forest and Gainesville sites following the protocols described in Chen et. al. (2014). Following sample collection, the impregnated cellulose filters shall be extracted with deionized (DI) water according to the standard IMPROVE method at: http://vista.cira.colostate.edu/Improve/wp-content/uploads/2016/07/IMPROVE-Anion-Cation-Analysis-by-Ion-Chromatography-SOP-2016.pdf

The MgO denuders will be provided by EPA. The contractor shall coat the MgO honeycomb denuders following the SOP provided, but not extract them. The MgO denuder shall be cleaned and recoated after 3 months. The MgO denuder SOP can be found here:

https://www3.epa.gov/ttn/amtic/files/ambient/pm25/spec/RTIMgOHoneycombDenuderSOP.pdf

The contractor shall prepare 3 denuders for the ADS (one Na₂CO₃ and two H₃PO₃-coated denuders). The two (H₃PO₃)-coated denuders will be extracted. The contactor shall extract the URG ADS denuders and H₃PO₃-impregnated filters using the recommendations described in EPA's Compendium of Methods for Inorganic Air Pollutants IO-4.2 (https://www3.epa.gov/ttn/amtic/files/ambient/inorganic/mthd-4-2.pdf). The H₃PO₃ denuders shall be extracted with DI water. The Na₂CO₃-coated denuder shall be cleaned and recoated monthly.

The nylon filter from the CSN SuperSASS shall be extracted for particulate NH₄⁺ using the procedure described in the CSN SOP located here: https://www3.epa.gov/ttn/amtic/files/ambient/pm25/spec/pm25cationsop.pdf.

All extracts should be stored under refrigeration until the analysis is performed.

Laboratory and field blanks shall be prepared and analyzed routinely as described in Table 1 below.

4. Sample Analysis

The contractor shall analyze the cellulose filter extracts and denuder extracts from the Gainesville and Duke Forest sites by IC. The Duke Forest operator will ship the denuder and filter extracts to the contractor's facility.

The contractor shall analyze the extracts using the method described in the SOP for PM_{2.5} Cation Analysis found here: https://www3.epa.gov/ttn/amtic/files/ambient/pm25/spec/pm25cationsop.pdf. Laboratory analysis results shall be converted to concentrations using the total sample volume recorded in a database.

Table 1

Network/Sampler	Channels	Schedule	Laboratory Blank	Field Blank
	Channel 1: H ₃ PO ₃ filter	1:3 day sampling	Weekly	Monthly
CCNI/Carrance A CC	(47 mm)	100 VIII VIII VIII VIII VIII VIII VIII V		
CSN/SuperSASS	Channel 2: MgO denuder,	1:3 day sampling	Weekly (filter	Weekly (filter
	47 mm nylon filter	700 XXII 34H3	only)	only)
IMPROVE	Channel B modified:	1:3 day sampling	Weekly	Monthly
Sampler	H ₃ PO ₃ filter (37 mm)			
	H ₃ PO ₃ Acid denuder (2)	1:3 day sampling	Weekly	Monthly
URG	Nylon Filter (47 mm)	1:3 day sampling	Weekly	Weekly
	Na ₂ CO ₃ denuder		None	None

VI. DELIVERABLES AND SCHEDULE

1. Proposal

The contractor shall deliver a Task Order Proposal in accordance with clause B.7 Task Order Ordering Procedures of the contract. The proposal shall be submitted 10 days after receipt of the SOW.

2. Monthly Progress Report

The contractor shall prepare and submit a monthly progress report by the 15th of each month summarizing the progress made, issues encountered or expected, work planned for the next reporting period and costs. These reports shall comply with contract clauses F.3 Reports of Work and F.5 Monthly Progress Report. Reports shall be delivered electronically.

3. Database

The contractor shall deliver a database submittal with valid data and all QA/QC data reported during the field campaign. Results from the previous 30-day period shall be submitted no later than 30 days after the last sample of the month was taken. The database shall be delivered on the last day of the month.

Distribution of Deliverables:

Addressee	Copies
EPA Contracting Officer (Mike Fox)	1
EPA Project Officer (Melissa Puchalski)	1
EPA Alternate (Gregory Beachley)	1
EPA Technical Advisor (John T Walker)	1
EPA Technical Advisor (Joann Rice)	1
EPA Technical Advisor (Rich Scheffe)	1

VII. References

Chen, X., Day, D., Schichtel, B., Malm, W., Matzoll, A.K., Mojica, J., McDade, C.E., Hardison, E.D., Hardison, D.L, Walters, S., Van De Water, M., and Collett Jr., J.L. (2014) Seasonal ambient ammonia and ammonium concentrations in a pilot IMPROVE NHx monitoring network in the western United States. Atmos. Envir. 91, 118-126.

RTI International, Standard Operating Procedures for Determination of Anions and/or Cations Extracted from Nylon Filters by Ion Chromatography (IC), Rev. 5. Mar. 3, 2016 (http://vista.cira.colostate.edu/Improve/wp-content/uploads/2016/07/IMPROVE-Anion-Cation-Analysis-by-Ion-Chromatography-SOP-2016.pdf).

RTI International, Standard Operating Procedure for Coating and Extracting Denuders for Capture of Ammonia and Its Measurement, Rev. 0. Feb. 14, 2008 (https://www3.epa.gov/ttn/amtic/files/ambient/pm25/spec/RTIDenudersCaptureAmmFINAL.pdf).

RTI International, Standard Operating Procedures for Coating Aluminum Honeycomb Denuders with Magnesium Oxide, Rev. 4. Feb. 17, 2009

(https://www3.epa.gov/ttn/amtic/files/ambient/pm25/spec/RTIMgOHoneycombDenuderSOP.pdf).

RTI International, Standard Operating Procedure for PM_{2.5} Cation Analysis, Rev. 7. Aug. 25, 2009 (https://www3.epa.gov/ttn/amtic/files/ambient/pm25/spec/pm25cationsop.pdf.).

US EPA, Model SASSTM & SuperSASSTM PM_{2.5} Ambient Chemical Speciation Samplers: Field Operation Manual, Doc. #SASS-9800 Rev. G. Dec. 27, 2001 (https://www3.epa.gov/ttnamti1/files/spectraining/MetOneSASSFOM.pdf).

US EPA, Compendium Method IO-4.2: Determination of Reactive Acidic and Basic Gases and Strong Acidity of Atmospheric Fine Particles (< 2.5 um). Jun. 1999 (https://www3.epa.gov/ttn/amtic/files/ambient/inorganic/mthd-4-2.pdf).

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2. AMENDMENT/MODIFICATION NO.	3. EFFECTIVE	DATE	 4. REQUISITION/PURCHASE REQ. NO.	5. PROJECT	∠ NO. (If applicable)
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6. ISSUED BY CODE	HPOD		7. ADMINISTERED BY (If other than Item 6)	CODE	
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8. NAME AND ADDRESS OF CONTRACTOR (No., street	t, county, State and	ZIP Code)	9A. AMENDMENT OF SOLICITATION NO	 D.	
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CODE 038086125	FACILITY COD	DE	04/18/2017		
	11. THIS ITE	 EM ONLY APPLIES TO AM	 ENDMENTS OF SOLICITATIONS		
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E. IMPORTANT: Contractor X is not.	is required t	o sign this document and	return copies to th	e issuing office.	
14. DESCRIPTION OF AMENDMENT/MODIFICATION DUNS Number: 038086125					
The purpose of this modifica	tion is	to de-obligat	e funding in the amoun	t of \$40,00	0.00 from
this task order.					
TOCOR: Melissa Puchalski					
LIST OF CHANGES:					
Reason for Modification : Fu	_	=			
Obligated Amount for this Mo					
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\$0.00 to \$25,565.00					
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Except as provided herein, all terms and conditions of the	ne document refe	renced in Item 9 A or 10A	7		
15A. NAME AND TITLE OF SIGNER (Type or print)			16A. NAME AND TITLE OF CONTRACTIN Michael C. Fox	G OFFICER (Type or p	эннс)
15B. CONTRACTOR/OFFEROR		15C. DATE SIGNED	16B. UNITED STATES OF AMERICA		16C. DATE SIGNED
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NAME OF OFFEROR OR CONTRACTOR

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	Incremental Funded Amount changed from \$0.00 to			
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	CHANGES FOR ACCOUNTING CODE:			
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	Amount changed from \$63,402.25 to \$23,402.25			
	Percent changed from 96.70137 to 0			
	FOB: Destination			
	Period of Performance: 04/18/2017 to 07/08/2017			
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HPOD US Environmental Protection William Jefferson Clinton Bu 1200 Pennsylvania Avenue, N. Mail Code: 3803R Washington DC 20460	ilding				
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AMEC ENVIRONMENT & INFRASTRUC Attn: LISA DWYER AMEC FOSTER WHEELER ENVIRONM: 751 ARBOR WAY, STE 180 (b)(4) BLUE BELL PA 194221960	CTURE, IN	NC.	9B. DATED (SEE ITEM 11) 10A. MODIFICATION OF CONTRACT/OR EP-W-16-015 0012 10B. DATED (SEE ITEM 13)		
CODE 038086125	FACILITY COL	DE	04/18/2017		
	11. THIS ITE	 EM ONLY APPLIES TO AM	 ENDMENTS OF SOLICITATIONS		
Offers must acknowledge receipt of this amendment p Items 8 and 15, and returning co separate letter or telegram which includes a reference THE PLACE DESIGNATED FOR THE RECEIPT OF overtitue of this amendment you desire to change an offer reference to the solicitation and this amendment, and 12. ACCOUNTING AND APPROPRIATION DATA (If req. See Schedule	pies of the amen to the solicitatio DFFERS PRIOR r already submitt is received prior	dment; (b) By acknowledg n and amendment numbe TO THE HOUR AND DAT ted , such change may be to the opening hour and d	ing receipt of this amendment on each copy ors. FAILURE OF YOUR ACKNOWLEDGEME E SPECIFIED MAY RESULT IN REJECTION made by telegram or letter, provided each tele	of the offer submitted; ENT TO BE RECEIVE OF YOUR OFFER If	or (c) By D AT by
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D. OTHER (Specify type of modification	***				
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E. IMPORTANT: Contractor X is not.	is required t	o sign this document and	return copies to the	issuing office.	
14. DESCRIPTION OF AMENDMENT/MODIFICATION DUNS Number: 038086125 TOCOR: Melissa Puchalski	(Organized by U	CF section headings, incl	iding solicitation/contract subject matter where	∍ feasible.)	
LIST OF CHANGES:					
Reason for Modification : Fu	ndina On	lv Action			
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Except as provided herein, all terms and conditions of the	e document refe	renced in Item 9 A or 10A	7		
15A. NAME AND TITLE OF SIGNER (Type or print)			Michael C. Fox	i OFFICER (Type or p	orint)
15B. CONTRACTOR/OFFEROR		15C. DATE SIGNED	16B. UNITED STATES OF AMERICA		16C. DATE SIGNED
(Signature of person authorized to sign)			Signature of Contracting Officer	EL FETRONIC S:GNATURE	09/13/2017

 CONTINUATION SHEET
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 PAGE 2
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NAME OF OFFEROR OR CONTRACTOR

ITEM NO.	SUPPLIES/SERVICES	QUANTITY UNIT	UNIT PRICE	AMOUNT
(A)	(B)	(C) (D)	(E)	(F)
	CHANGES FOR ACCOUNTING CODE: 17-E1-53GS-102A04XPM-4183-1753PM7051-002			
	Amount changed from \$23,402.25 to \$18,052.04			
	FOB: Destination Period of Performance: 04/18/2017 to 07/08/2017			
	Period of Periormance: 04/18/201/ to 0//08/201/			
NCN 7540 04 45	1	1 1 1		ODTIONAL FORMASS (4.00)